

Notice of Allowability

Application No.

10/670,561

Examiner

Srirama Channavajjala

Applicant(s)

CHKODROV ET AL.

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/9/06.
2. ☒ The allowed claim(s) is/are 1-7,9,11,13,15-16,18-23,25,27,29,31-32,34-36,38,40,42-43,46-48 [re-numbered as: 1-33].
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>9/11/2006</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>8/9/06;4/25/06</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. Examiner acknowledges applicant's amendment to claims 1-7, 10-11, 13, 15-16, 18-23, 25-27, 29, 31-32, 34-36, 38-40, 42-43, and claims 8, 12, 14, 17, 24, 28, 30, 33, 37, 41, 44 have been cancelled, new claims 45-48 have been added. [filed] on 8/9/2006.
2. Examiner acknowledges applicant's "Amendments to the Specification", pursuant to 37 CFR 1.125(b) and 1.125(c) a substitute specification "**Marked up**" copy showing all the changes , and "**clean copy**" of the substitute specification.

Drawings

3. The Drawings "Replacement sheet fig 1-12", and "new drawing fig 14" filed on 8/9/2006 are acceptable for examination purpose.
4. Examiner approved "new Drawing fig 14", and a copy of fig 14 is hereby attached to this office action.

Information Disclosure Statement

5. The information disclosure statement filed on 4/25/2006, 8/9/2006 is in compliance with the provisions of 37 CFR 1.97, and has been considered and a copy is enclosed with this Office Action.

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Interview:

6. Applicant's Attorney H. Wayne Porter, Regd.No. 42,084 is thanked for the telephone interview on 11 September 2006. During that telephone interview H. Wayne Porter granted authorization to amend claims 1,11,13,15,18,27,29,31,34,35,38,40,42,43, cancel claims 10,26,39,45 and amendment to the substitute specification [clean] copy page 8, [27].

EXAMINER'S AMENDMENT

7. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with H. Wayne Porter, Regd.No. 42,084 on 11 September 2006.

The application has been amended as follows:

In the Specification [clean copy]:

Please *replace paragraph at page 8, [27]* of the specification [clean copy] with the following amended paragraph [27], wherein added material is indicated by underlines:

[27] The present invention will also be described by reference to RDBMS software (such as the aforementioned SQL SERVER™ 2000 software) operating on a server and accessed by one or more clients. Such configurations are known in the art and described in, e.g., the previously-incorporated U.S. patent application 10/157,968. However, a client-server configuration is only one example of a manner in which the invention can be implemented. The invention can also be implemented in other physical system configurations. Embodiments of the invention can also be implemented as a computer-readable storage medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to perform a method for aggregating data from multiple database records in order to summarize information about multiple instances of an organizational activity.

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In the Claims:

1. (Currently amended) A method for aggregating data from multiple records of a database records—in order to summarize information about multiple instances of an organizational activity, wherein each of the multiple database records corresponds to one of the multiple organizational activity instances, wherein data within each of the multiple database records reflects an attribute of the organizational activity instance corresponding to that record, and wherein the method is performed by a plurality of program threads in at least one computer, comprising:

creating at least one aggregation table representing multiple partitions, each partition including a plurality of aggregation records, each aggregation record including an aggregation value representing an aggregation of values contained by fields of a distinct subset of the multiple database records;

selecting a first of the multiple partitions upon insertion or update of a first of the multiple database records, wherein said selecting is initiated in response to a request by a first of the plurality of program threads to access one of the multiple partitions;

updating the aggregation value in at least one of the aggregation records in the first partition, wherein the updating is performed by the first program thread as part of a first partition update transaction, and wherein the first partition update transaction is based on one or more values within the inserted or updated first database record;

preventing other program threads from accessing the first partition until the first program thread no longer requires access to the first ~~partition~~ partition;

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selecting a second partition, while the first partition update transaction is being performed, wherein said selecting is initiated in response to a request by a second of the plurality of program threads to access one of the multiple ~~partitions~~ partitions;

updating the aggregation value in at least one of the aggregation records in the second partition, wherein the updating is performed by the second program thread as part of a second partition update transaction, wherein the second partition update transaction is based on one or more values within ~~the~~ an inserted or updated second database record, and wherein the second partition update transaction is performed during performance of the first partition update transaction; and

aggregating aggregation values from the multiple partitions and outputting said aggregated aggregation values as a part of a summary of the multiple organizational activity ~~instances~~ instances, and wherein

each of the multiple database records includes a field having a value indicating the corresponding instance to be in one of several process states, and

each partition includes time-sorted aggregation records, each time-sorted aggregation record containing an aggregation value for instances in one of the several process states during a time period associated with the time-sorted aggregation record.

2. (Previously presented) The method of claim 1, wherein each of the multiple partitions is represented in a separate aggregation table.

3. (Previously presented) The method of claim 1, further comprising:
selecting a third partition upon initiation of a subsequent transaction to update the first of the multiple database records; and
revising, based on one or more values within the subsequently updated first database record, the aggregation value of an aggregation record of the third partition.
4. (Previously presented) The method of claim 1, wherein the step of aggregating aggregation values comprises combining the multiple partitions into a single table of aggregation records, each record of the single table aggregating values of an aggregation record from each of the multiple partitions.
5. (Previously presented) The method of claim 1, wherein said creating at least one aggregation table comprises creating at least three partitions.
6. (Previously presented) The method of claim 1, wherein said creating at least one aggregation table comprises creating at least ten partitions.
7. (Previously presented) The method of claim 1, wherein the steps of the method are performed on a computer with at least one processor, and wherein said creating at least one aggregation table comprises creating a number of partitions greater than the number of processors in said computer.

8. (Canceled)

9. (Previously presented) The method of claim 1, further comprising:
determining, upon receiving a request from the first program thread for access to
a partition, a system identifier for the first program thread; and
assigning a partition identifier to the first program thread based on the
determined system identifier.

10. (Canceled)

11. (Currently amended) The method of claim ~~40~~1, wherein one of said
several process states comprises an instance being completed, and further comprising:
revising the aggregation values of the time-sorted aggregation records so as to
exclude from said revised values the effects of records corresponding to instances
completed outside of a preselected time window.

12. (Canceled)

13. (Currently amended) The method of claim ~~40~~1, further comprising:

deleting an aggregation record from a partition subsequent to a determination that none of the multiple database records associated with said partition were in one of the process states during a time period corresponding to the deleted aggregation record.

14. (Cancelled)

15. (Currently amended) The method of claim ~~40~~1, wherein the one of the process states corresponds to an instance being completed and wherein each of the multiple database records includes a completion time field; and further comprising:

assigning a null value to the completion time field for database records corresponding to instances that are not completed;

assigning a non-null value to the completion time field for database records corresponding to instances in the completed process state.

16. (Previously presented) The method of claim 15, further comprising:

determining if a record of the multiple database records has been updated;

revising, upon determining that the database record has been updated and based on said update, an aggregation value of one of the plurality of aggregation records;

further determining whether the updated database record contains a value indicating the corresponding instance is in the completed process state;

generating, upon determining that the corresponding instance is in the completed process state, a time of completion value for the instance; and

updating the one of the plurality of aggregation records based on the time of completion value for the instance.

17. (Canceled)

18. (Currently amended) A computer-readable storage medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to perform a method for aggregating data from multiple ~~database records~~ of a database in order to summarize information about multiple instances of an organizational activity, wherein each of the multiple database records corresponds to one of the multiple organizational activity instances, wherein data within each of the multiple database records reflects an attribute of the organizational activity instance corresponding to that record, and wherein the method is performed by a plurality of program threads in at least one computer, the instructions comprising:

instructions for creating at least one aggregation table representing multiple partitions, each partition including a plurality of aggregation records, each aggregation record including a value for an aggregation of values contained by fields of a distinct subset of multiple database records;

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instructions for selecting a first of the multiple partitions upon insertion or update of a first of the multiple database records, wherein said selecting is initiated in response to a request by a first of the plurality of program threads to access one of the multiple partitions;

instructions for updating the aggregation value in at least one of the aggregation records in the first partition, wherein the updating is performed by the first program thread as part of a first partition update transaction, and wherein the first partition update transaction is based on one or more values within the inserted or updated first database record;

instructions for preventing other program threads from accessing the first partition until the first program thread no longer requires access to the first ~~partition~~ partition;

instructions for selecting a second partition, while the first partition update transaction is being performed, wherein said selecting is initiated in response to a request by a second of the plurality of program threads to access one of the multiple ~~partitions~~ partitions;

instructions for updating the aggregation value in at least one of the aggregation records in the second partition, wherein the updating is performed by the second program thread as part of a second partition update transaction, wherein the second partition update transaction is based on one or more values within ~~the~~ an inserted or updated second database record, and wherein the second partition update transaction is performed during performance of the first partition update transaction; and

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instructions for aggregating aggregation values from the multiple partitions and outputting said aggregated aggregation values as a part of a summary of the multiple organizational activity ~~instances~~instances, and wherein

each of the multiple database records includes a field having a value indicating the corresponding instance to be in one of several process states, and

each partition includes time-sorted aggregation records, each time-sorted aggregation record containing an aggregation value for instances in one of the several process states during a time period associated with the time-sorted aggregation record.

19. (Previously presented) The computer-readable storage medium of claim 18, wherein each of the multiple partitions is represented in a separate aggregation table.

20. (Previously presented) The computer-readable storage medium of claim 18, further comprising:

instructions for selecting a third partition upon initiation of a subsequent transaction to update the first of the multiple database records; and

instructions for revising, based on one or more values within the subsequently updated first database record, the aggregation value of an aggregation record of the third partition.

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21. (Previously presented) The computer-readable storage medium of claim 18, wherein aggregating aggregation values comprises combining the multiple partitions into a single table of aggregation records, each record of the single table aggregating values of an aggregation record from each of the multiple partitions.

22. (Previously presented) The computer-readable storage medium of claim 18, wherein said creating at least one aggregation table comprises creating at least three partitions.

23. (Previously presented) The computer-readable storage medium of claim 18, wherein said creating at least one aggregation table comprises creating at least ten partitions.

24. (Canceled)

25. (Previously presented) The computer-readable storage medium of claim 18, further comprising:

instructions for determining, upon receiving a request from the first program thread for access to a partition, a system identifier for the first program thread; and

instructions for assigning a partition identifier to the first program thread based on the determined system identifier.

26. (Canceled)

27. (Currently amended) The computer-readable storage medium of claim ~~26~~18, wherein one of said several process states comprises an instance being completed, and further comprising:

instructions for revising aggregation values of the time-sorted aggregation records so as to exclude from said revised values the effects of records corresponding to instances completed outside of a preselected time window.

28. (Canceled)

29. (Currently amended) The computer-readable storage medium of claim ~~26~~18, further comprising:

instructions for deleting an aggregation record from a partition subsequent to a determination that none of the multiple database records associated with said partition were in one of the process states during a time period corresponding to the deleted aggregation record.

30. (Canceled)

31. (Currently amended) The computer-readable storage medium of claim 2618, wherein the one of the process states corresponds to an instance being completed and wherein each of the multiple database records includes a completion time field; and further comprising:

instructions for assigning a null value to the completion time field for database records corresponding to instances that are not completed;

instructions for assigning a non-null value to the completion time field for database records corresponding to instances in the completed process state.

32. (Previously presented) The computer-readable storage medium of claim 31, further comprising:

instructions for determining if a record of the multiple database records has been updated;

instructions for revising, upon determining that the database record has been updated and based on said update, an aggregation value of one of the plurality of aggregation records;

instructions for further determining whether the updated database record contains a value indicating the corresponding instance is in the completed process state;

instructions for generating, upon determining that the corresponding instance is in the completed process state, a time of completion value for the instance; and

instructions for updating the one of the plurality of aggregation records based on the time of completion value for the instance.

33. (Canceled)

34. (Currently amended) A data processing apparatus for aggregating data from multiple ~~database~~ records of a database in order to summarize information about multiple instances of an organizational activity, wherein each of the multiple database records corresponds to one of the multiple organizational activity instances, and wherein data within each of the multiple database records reflects an attribute of the organizational activity instance corresponding to that record, comprising:

at least one data storage device;

at least one user input device; and

a processor operatively connected to said storage device and said user input device, wherein the at least one data storage device has stored thereon a set of instructions which, when executed, configure said processor to

create at least one aggregation table representing multiple partitions, each partition including a plurality of aggregation records, each aggregation record including an aggregation value representing an aggregation of values contained by fields of a distinct subset of the multiple database ~~records;~~ records.

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select a first of the multiple partitions upon insertion or update of a first of the multiple database records, wherein said selecting is initiated in response to a request by a first program thread to access one of the multiple ~~partitions;~~partitions.

update the aggregation value in at least one of the aggregation records in the first partition, wherein the updating is performed by the first program thread as part of a first partition update transaction, and wherein the first partition update transaction is based on one or more values within the inserted or updated first database ~~record;~~record.

prevent other program threads from accessing the first partition until the first program thread no longer requires access to the first ~~partition;~~partition.

select a second partition, while the first partition update transaction is being performed, wherein said selecting is initiated in response to a request by a second program thread to access one of the multiple ~~partitions;~~partitions.

update the aggregation value in at least one of the aggregation records in the second partition, wherein the updating is performed by the second program thread as part of a second partition update transaction, wherein the second partition update transaction is based on one or more values within ~~the~~an inserted or updated second database record, and wherein the second partition update transaction is performed during performance of the first partition update ~~transaction;~~transaction, and

aggregate aggregation values from the multiple partitions and output said aggregated aggregation values as a part of a summary of the multiple organizational activity ~~instances;~~instances, and wherein

each of the multiple database records includes a field having a value indicating the corresponding instance to be in one of several process states, and
each partition includes time-sorted aggregation records, each time-sorted aggregation record containing an aggregation value for instances in one of the several process states during a time period associated with the time-sorted aggregation record.

35. (Currently amended) The data processing apparatus of claim 34, wherein the set of instructions includes additional instructions which, when executed, configure said processor to:

select a third partition upon initiation of a subsequent transaction to update the first of the multiple database ~~records;~~records, and

revise, based on one or more values within the subsequently updated first database record, the aggregation value of an aggregation record of the third partition.

36. (Previously presented) The data processing apparatus of claim 34, wherein aggregating aggregation values comprises combining the multiple partitions into a single table of aggregation records, each record of the single table aggregating values of an aggregation record from each of the multiple partitions.

37. (Canceled)

38. (Currently amended) The data processing apparatus of claim 34, wherein the set of instructions includes additional instructions which, when executed, configure said processor to:

determine, upon receiving a request from the first program thread for access to a partition, a system identifier for the first program ~~thread~~thread, and

assign a partition identifier to the first program thread based on the determined system identifier.

39. (Canceled)

40. (Currently amended) The data processing apparatus of claim ~~39~~34, wherein the set of instructions includes additional instructions which, when executed, configure said processor to:

revise the aggregation values of the time-sorted aggregation records so as to exclude from said revised values the effects of records corresponding to instances completed outside of a preselected time window.

41. (Canceled)

42. (Currently amended) The data processing apparatus of claim ~~39~~34, wherein the one of the process states corresponds to an instance being completed, wherein each of the multiple database records includes a completion time field, and

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wherein the set of instructions includes additional instructions which, when executed, configure said processor to:

assign a null value to the completion time field for database records corresponding to instances that are not completed, and

assign a non-null value to the completion time field for database records corresponding to instances in the completed process state.

43. (Currently amended) The data processing apparatus of claim 42, wherein the set of instructions includes additional instructions which, when executed, configure said processor to:

determine if a record of the multiple database records has been ~~updated~~; updated,

revise, upon determining that the database record has been updated and based on said update, an aggregation value of one of the plurality of aggregation ~~records~~; records,

further determine whether the updated database record contains a value indicating the corresponding instance is in the completed process ~~state~~; state,

generate, upon determining that the corresponding instance is in the completed process state, a time of completion value for the ~~instance~~; instance, and

update the one of the plurality of aggregation records based on the time of completion value for the instance.

44. (Canceled)

45. (Canceled)

46. (Previously presented) The method of claim 1, wherein preventing other program threads from accessing the first partition comprises providing the first program thread with a virtual token corresponding to the first partition, and wherein possession of said virtual token is required to access said first partition.

47. (Previously presented) The computer-readable storage medium of claim 18, wherein preventing other program threads from accessing the first partition comprises providing the first program thread with a virtual token corresponding to the first partition, and wherein possession of said virtual token is required to access said first partition.

48. (Previously presented) The data processing apparatus of claim 34, wherein preventing other program threads from accessing the first partition comprises providing the first program thread with a virtual token corresponding to the first partition, and wherein possession of said virtual token is required to access said first partition.

In the Title:

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Pursuant to MPEP 606.01 the **Title** is changed to read:

**--- MAINTAINING TIME-SORTED AGGREGATION VALUES IN MULTIPLE DATABASE
RECORDS WHERE AGGREGATION TABLE REPRESENTING MULTIPLE
PARTITIONS --**

Reasons for allowance

Claims 1-7,9,11,13,15-16,18-23,25,27,29,31-32,34-36,38,40,42-43,46-48 are allowed

The following is an examiner's statement of reasons for indication of allowable subject matter: The prior art of record does not disclose, make obvious, or otherwise suggest the structure of the applicant's aggregating data from multiple records of a database in order to summarize information about multiple instances of an organizational activity, wherein each of the multiple database records corresponds to one of the multiple organizational activity instances, wherein data within each of the multiple database records reflects an attribute of the organizational activity instance corresponding to that record, and wherein the method is performed by a plurality of program threads in at least one computer "aggregating aggregation values from the multiple partitions and outputting said aggregated aggregation values as a part of a summary of the multiple organizational activity instances, and wherein each of the multiple database records includes a field having a value indicating the corresponding instance to be in one of several process states, and each partition includes time-sorted aggregation records, each time-sorted aggregation record containing an aggregation value for instances in one of the several process states during a time period associated with the time-sorted aggregation record in claim 1,18,34

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These features, together with the other limitations of the independent claims are novel and non-obvious over the prior art of record.

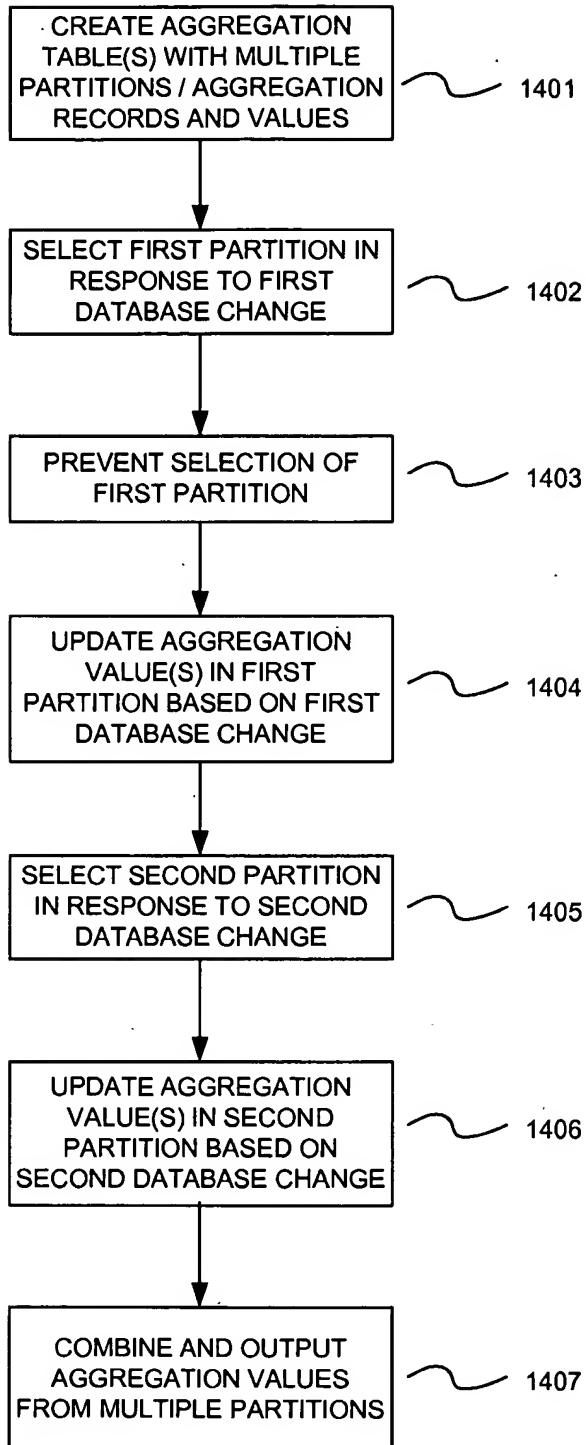
The dependent claims 2-7,9,11,13,15-16,19-23,25,27,29,31-32,35-36,38,40,42-43, 46-48 being definite, enabled by the specification, and further limiting to the independent claims are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alam, Hosain, T, can be reached on (571) 272-3978. The fax phone numbers for the organization where the application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

sc
Patent Examiner.
September 12, 2006.


SRIRAMA CHANNAVAJALA
PRIMARY EXAMINER



Approved
for
9/11/02

FIG. 14